

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A computer system to virtually organize content of a plurality of disparate content repositories, content organizing structures of the plurality of disparate content repositories, work items of a plurality of disparate workflow systems, and work organizing structures of the plurality of disparate workflow systems, comprising:

a processing unit~~processor~~; and

a memory comprising:

~~— an application program interface (API), executable by said processor, to interface with a software application; and~~

a virtual repository comprising a plurality of nodes, a first node of the plurality of nodes linking to a work item of a first workflow system of the plurality of workflow systems, a second node of the plurality of nodes linking to a work item of a second workflow system of the plurality of workflow systems, a third node of the plurality of nodes linking to a work organizing structure of the first workflow system, a fourth node of the plurality of nodes linking to a work organizing structure of the second workflow system, a fifth node of the plurality of nodes linking to a content of a first content repository of said plurality of disparate content repositories, a sixth node of the plurality of nodes linking to a content of a second content repository of said plurality of disparate content repositories, a seventh node of the plurality of nodes linking to a content organizing structure of the first content repository, and an eighth node of the plurality of nodes linking to a content organizing structure of the second content repository, ~~wherein the API provides access to the virtual repository~~, wherein the work organizing structure of the first workflow system is one of: a queue and a task list, wherein the work organizing structure of the second workflow system is one of: another

queue and another task list, wherein the content organizing structure of the first content repository is a folder, wherein the content organizing structure of the second content repository is another folder, the virtual repository also comprising at least one virtual folder, wherein each said at least one virtual folder is also a node of said plurality of nodes, wherein said first node, said second node, said third node, said fourth node, said fifth node, said sixth node, said seventh node and said eighth node are organized via said at least one virtual folder; and

an application programming interface (API), executable by said processing unit, to interface with a software application to provide access to the virtual repository, wherein said at least one virtual folder is accessed via said API;

wherein said work item of said first workflow system is accessed via said first node, said work item of said second workflow system is accessed via said second node, said work organizing structure of said first workflow system is accessed via said third node, said work organizing structure of said second workflow system is accessed via said fourth node, said first content repository is accessed via said fifth node, said content of said second content repository is accessed via said sixth node, said content organizing structure of said first content repository is accessed via said seventh node, and said content organizing structure of said second content repository is accessed via said eighth node.

Claim 2 (currently amended): The computer system of claim 1 wherein creation of the virtual repository does not replicate any of the content, content organizing structures, work items, and work organizing structures; and wherein the creation of the virtual repository does not impact any of the content, content organizing structures, work items, and work organizing structures.

Claim 3 (currently amended): The computer system of claim 1 wherein creation of the virtual repository does not impact any of an existing organization of any of the content, content organizing structures, work items, and work organizing structures,

wherein creation of the virtual repository does not impact any functions of any of the content, content organizing structures, work items, and work organizing structures,

wherein creation of the virtual repository does not impact any indexing of any of the content, content organizing structures, work items, and work organizing structures, and

wherein creation of the virtual repository does not impact any security of any of the content, content organizing structures, work items, and work organizing structures.

Claim 4 (currently amended): The computer system of claim 1 wherein the API is in a format selected from the group consisting of Java, Component Object Model (COM), Simple Object Protocol (SOAP) Web Services, Representational State Transfer (REST) Web Services, and Web Development Components.

Claim 5 (currently amended): The computer system of claim 1 further comprising at least one of a graphical user interface and a web-based interface.

Claim 6 (currently amended): The computer system of claim 1 wherein the nodes are arranged in a parent-child hierarchy.

Claim 7 (currently amended): The computer system of claim 1 wherein the fifth node is of a type of a link to a repository content, the sixth node is of the type of the link to the repository content, the seventh node is of the type of a link to a repository folder, the eighth node is of the type of the link to the repository folder, the first node is of the type of a link to a workflow system work item, the second node is of the type of the link to the workflow system work item, the third node is of the type of a link to a workflow system work queue, the fourth node is of the type of the link to the workflow system work queue, wherein the virtual repository comprises:

wherein said at least one a ninth node being of the type of a virtual folder is at least one ninth node, respectively, said at least one virtual folder further comprises: [[,]]

_____ a tenth node being of the type of a link to a folder populated by saved repository search,

_____ an eleventh node being of a type of a link to a folder populated by a workflow system search, and

_____ a twelfth node being of a type of a link to an external resource via a URL.

Claim 8 (currently amended): The computer system of claim 1 wherein the nodes contain meta-data properties in addition to the meta-data maintained in their respective underlying said content repositories and said workflow systems, wherein the meta-data properties of the nodes describe a use of the content, content organizing structures, work items and work organizing structures of the virtual repository.

Claim 9 (currently amended): The computer system of claim 1 wherein ~~at least one~~ the first content repository of the plurality of content repositories has first-content-repository access control rules to the content and the content organizing structure structures, wherein ~~at least one~~ the first workflow system of the plurality of workflow systems has first-workflow access control rules to the first work item items and the first work organizing structure structures, wherein the nodes of the virtual repository comprise supplemental access control rules of the virtual repository, wherein the supplemental access control rules are applied to the nodes within the virtual repository, wherein the supplemental access control rules describe supplemental security constraints to the content and content organizing structures of the ~~at least one~~ first content repository, wherein the supplemental access control rules describe security constraints to the work items and work organizing structures of the ~~at least one~~ first workflow system,

_____ wherein the content of the first content repository is accessed in accordance with the supplemental access control rules of the virtual repository and the first-content-repository access control rules of the first content repository.

wherein the first work item of the first workflow system is accessed in accordance with the supplemental access control rules of the virtual repository and the first-workflow access control rules of the first workflow system.

Claim 10 (currently amended): The computer system of claim 1 wherein the virtual repository is exported to an XML representation and imported from the same XML representation.

Claim 11 (currently amended): The computer system of claim 1 further comprising a middleware platform to abstract a particular content repository of the plurality of content repositories of the virtual repository, and another middleware platform to abstract a particular workflow system of the plurality of workflow systems of the virtual repository.

Claim 12 (currently amended): The computer system of claim 1 further comprising adaptors to provide access to specific content repositories and workflow systems.

Claim 13 (currently amended): The computer system of claim 1 further comprising an adaptor toolkit to build interfaces to future developed content repositories and workflow systems.

Claim 14 (canceled)

Claim 15 (canceled)

Claim 16 (canceled)

Claim 17 (canceled)

Claim 18 (canceled)

Claim 19 (canceled)

Claim 20 (canceled)

Claim 21 (canceled)

Claim 22 (canceled)

Claim 23 (canceled).

Claim 24 (currently amended): A computer system to create rich relationships between content, content organizing structures, work items and work organizing structures that exist in a plurality of content repositories, a plurality of workflow systems and at least one other external information source, comprising:

a processing unit ~~processor~~; and

a memory comprising:

a module comprising an application program interface (API), executable by the processing unit ~~processor~~, to interface with a software application;

a plurality of nodes, created using the first software, wherein the API provides an interface to the plurality of nodes, a first node of the plurality of nodes linking to a first work item of a first workflow system of the plurality of workflow systems, a second node of the plurality of nodes linking to a second work item of a second workflow system of the plurality of workflow systems, a third node of the plurality of nodes linking to a first work organizing structure of the first workflow system, a fourth node of the plurality of nodes linking to a second work organizing structure of the second workflow system, a fifth node of the plurality of nodes linking to a first content of a first content repository of said plurality of disparate content repositories, a sixth node of the plurality of nodes linking to a second content of a second content repository of said plurality of disparate content repositories, a seventh node of the plurality of nodes linking to a first content organizing structure of the first content

repository, and an eighth node of the plurality of nodes linking to a second content organizing structure of the second content repository;

a plurality of associations, created using the first software, describing relationships between the nodes, each association of said plurality of associations having at least two nodes of the plurality of nodes that are members of said each ~~that~~ association, said each association describing a relationship between the members of that association, said each association also being a node of the plurality of nodes, wherein said first, second, third, fourth, fifth, sixth, seventh, and eighth nodes are members of at least one association of the plurality of associations, wherein said first node linking to said first work item of said first workflow system and said fifth node linking to said first content of said first content repository are related via at least one particular association of said plurality of associations; and

a plurality of locators to reference and de-reference entities external to the first module system, said plurality of locators comprising a first locator to a first external entity reference, the first external entity being said first work item of said first workflow system, the first locator leverages workflow integration middleware to reference said first work item of said first workflow system; a second locator to a second external entity reference, the second external entity being said second work item of said second workflow system, the second locator leverages said workflow integration middleware to reference said second work item ~~from~~ of said second workflow system; a third locator to a third external entity reference, the third external entity being the first work organizing structure of said first workflow system, the third locator leverages said workflow integration middleware to reference said first work organizing structure of said first workflow system, a fourth locator to a fourth external entity reference, the fourth external entity being said second work organizing structure of said second workflow system, the fourth locator leverages said workflow integration middleware to reference said second work organizing structure of said second workflow system; a fifth locator to a fifth external entity reference, the fifth external entity being said first content of said first content repository, the fifth locator leverages content integration middleware to reference said first content of said first content repository; a sixth locator to a sixth external entity reference, the sixth external entity being said second content of said second content

repository, the sixth locator leverages said content integration middleware to reference said second content of said second content repository; a seventh locator to a seventh external entity reference, the seventh external entity being said first content organizing structure of said first content repository, the seventh locator leverages said content integration middleware to reference said first content organizing structure of said first content repository; an eighth locator to an eighth external entity reference, the eighth external entity being said second content organizing structure of said second content repository, the eighth locator leverages said content integration middleware to reference said second content organizing structure of said second content repository; and an extensible locator interface to provide [[a]] at least one additional locator to another external information sourcesystem;
said module providing access to said entities via said API, wherein said first work item of said first workflow system via said first node, said first locator and said workflow integration middleware; said second work item of said second workflow system is accessed via said second node, said second locator and said workflow integration middleware; said first work organizing structure of said first workflow system is accessed via said third node, said third locator and said workflow integration middleware; said second work organizing structure of said second workflow system is accessed via said fourth node, said fourth locator and said workflow integration middleware; said first content of said first content repository is accessed via said fifth node, said fifth locator and said content integration middleware; said second content of said second content repository is accessed via said sixth node, said sixth locator and said content integration middleware; said first content organizing structure of said first content repository is accessed via said seventh node, said seventh locator and said content integration middleware; said second content organizing structure of said second content repository is accessed via said eighth node, said eighth locator and said content integration middleware.

Claim 25 (currently amended): The computer system of claim 24 wherein the API is in a format selected from the group consisting of Java, Component Object Model (COM), Simple

Object Protocol (SOAP) Web Services, Representational State Transfer (REST) Web Services, and Web Development Components.

Claim 26 (currently amended): The computer system of claim 24 further comprising at least one of a graphical user interface and a web-based interface.

Claim 27 (currently amended): The computer system of claim 24 wherein said first node represents said first work item, said second node represents said second work item, said third node represents said first work organizing structure, said fourth node represents said second work organizing structure, said fifth node represents said first content, said sixth node represents said second content, said seventh node represents said first content organizing structure, and said eighth node represents said second content organization structure, ~~the plurality of nodes represent content, content organizing structures, work items and work organizing structures that will participate~~ said first, second, third, fourth, fifth, sixth, seventh and eighth nodes participating in said relationships with information, said information for each node of the plurality of said first, second, third, fourth, fifth, sixth, seventh and eighth nodes comprising at least one of: meta-data describing said each node, at least one role played in at least one association of said plurality of associations with another node, zero or more scoped names, a unique identifier of the subject of said each node, a locator of the external subject of said each node, and 0 or more node types.

Claim 28 (canceled).

Claim 29 (currently amended): The computer system of claim 24 wherein ~~the~~ said each association of said plurality of associations has said at least two of said members that are nodes playing a specific named role in ~~the~~ said each association.

Claim 30 (currently amended): The computer system of claim 24 wherein a member represents a specific role a node plays in the association.

Claim 31 (currently amended): The computer system of claim 30 wherein the member has a player specifying the node playing the role in the association.

Claim 32 (currently amended): The computer system of claim 24 wherein the associations have 0 or more association types, wherein the association types have logical properties describing the type of the relationship, wherein ~~any association types~~ said logical properties comprise at least one of: an allowed cardinality of the relationship, allowed members of the relationship, required members of the relationship, a transitivity of the relationship, a delete propagation across the relationship, and a save propagation across the relationship.

Claim 33 (canceled).

Claim 34 (canceled)

Claim 35 (canceled)

Claim 36 (canceled)

Claim 37 (canceled)

Claim 38 (canceled)

Claim 39 (currently amended): A computer system to provide notification of at least one event handler, comprising:

a processing unit ~~processor~~; and

a memory comprising:

~~an~~ a module application program interface (API), executable by the processing unit ~~processor~~, to interface with a software application; ~~and~~

a plurality of subscriptions to a plurality of subscribed-to-items, respectively, wherein the module API interfaces to the software application to create the plurality of subscriptions; the subscribed-to-items comprising a first content of a first content repository, a first content organizing structure of the first content repository, a first work item of a first workflow system, a first work organizing structure of the first workflow system, a second content of a second content repository, a second content organizing structure of the second content repository, a second work item of a second workflow system, a second work organizing structure of the second workflow system;

wherein the subscriptions are requests to track when at least one of an addition, change and delete occurs to any of the subscribed-to-items, respectively; and

an event path defined per a logical group comprising a timer, a subscription group processor that creates events based on the subscriptions in response to the timer, a content monitor that detects change based on the events, an event filter that filters uninteresting change and interesting change based on the change detected by the content monitor, and an event handler that receives the interesting change, wherein the software application configures the event path via the module API.

Claim 40 (currently amended): The computer system of claim 39 wherein the timer initiates periodic polling of at least one of the first and second content repositories and the first and second workflow systems to detect [[a]] the change.

Claim 41 (currently amended): The computer system of claim 39 wherein the subscription group processor initiates the events on subscriptions of a subscription group.

Claim 42 (currently amended): The computer system of claim 39 wherein the content monitor comprises a plug-in software module to detect the change in the subscribed-to-items.

Claim 43 (currently amended): The computer system of claim 39 wherein the event filter comprises at least one plug-in module ~~modules~~ that filters the ~~filter~~ interesting and

uninteresting ~~change~~ changes in the subscribed-to-items, ~~wherein the changes are filtered~~
based on a meta-data value of at least one of the subscribed-to-items.

Claim 44 (currently amended): The computer system of claim 39 wherein a subscription context is made available to the content monitor, event filter and event handler ~~event path plug-ins, content monitors, event filters, and event handlers~~ with access selected from at least one of: access to a live content integration middleware session, access to a live workflow integration middleware session, access to a statistics reporting API, access to an error reporting API, access to a logging API, and access to ~~the~~ an active subscription ~~for the plug-in~~.

Claim 45 (currently amended): The computer system of claim 39 ~~[[34]]~~ further comprising a statistics module to gather runtime statistics on the events passing through ~~each step of an the~~ event path and displaying said statistics; ~~wherein said event path comprises a timer, a group processor, a content monitor, an event filter and an event handler.~~

Claim 46 (canceled)

Claim 47 (canceled)

Claim 48 (currently amended): A computer-implemented method of virtually organizing content of a plurality of disparate content repositories, content organizing structures of the plurality of disparate content repositories, work items of a plurality of disparate workflow systems, and work organizing structures of the plurality of disparate workflow systems, comprising:

providing an application program interface (API) to a virtual repository; and
creating ~~accessing~~ the virtual repository via the API, wherein the virtual repository comprises a plurality of nodes, a first node of the plurality of nodes linking to a work item of a first workflow system of the plurality of workflow systems, a second node of the plurality

of nodes linking to a work item of a second workflow system of the plurality of workflow systems, a third node of the plurality of nodes linking to a work organizing structure of the first workflow system, a fourth node of the plurality of nodes linking to a work organizing structure of the second workflow system, a fifth node of the plurality of nodes linking to a content of a first content repository of said plurality of disparate content repositories, a sixth node of the plurality of nodes linking to a content of a second content repository of said plurality of disparate content repositories, a seventh node of the plurality of nodes linking to a content organizing structure of the first content repository, and an eighth node of the plurality of nodes linking to a content organizing structure of the second content repository, wherein the work organizing structure of the first workflow system is one of: a queue and a task list, wherein the work organizing structure of the second workflow system is one of: another queue and another task list, wherein the content organizing structure of the first content repository is a folder, wherein the content organizing structure of the second content repository is another folder, the virtual repository also comprising at least one virtual folder, wherein each said at least one virtual folder is also a node of said plurality of nodes, wherein said first node, said second node, said third node, said fourth node, said fifth node, said sixth node, said seventh node and said eighth node are organized via said at least one virtual folder; and

accessing the virtual repository via the API, wherein said work item of said first workflow system is accessed via said first node, said work item of a second workflow system is accessed via said second node, said work organizing structure of the first workflow system is accessed via said third node, said work organizing structure of the second workflow system is accessed via said fourth node, said first content repository is accessed via said fifth node, said content of said second content repository is accessed via said sixth node, said content organizing structure of the first content repository is accessed via said seventh node, and said content organizing structure of the second content repository is accessed via said eighth node.

Claim 49 (canceled)

Claim 50 (currently amended): A computer-implemented method of creating rich relationships between content, content organizing structures, work items and work organizing structures that exist in a plurality of content repositories, a plurality of workflow systems and at least one external information source, comprising:

~~providing interfacing, via an a module~~ application program interface (API) ~~[[,]]~~ to interface a software application to a module;

creating, via the module API, a plurality of nodes accessible to said module, wherein the module API provides access to the plurality of nodes, a first node of the plurality of nodes linking to a first work item of a first workflow system of the plurality of workflow systems, a second node of the plurality of nodes linking to a second work item of a second workflow system of the plurality of workflow systems, a third node of the plurality of nodes linking to a first work organizing structure of the first workflow system, a fourth node of the plurality of nodes linking to a second work organizing structure of the second workflow system, a fifth node of the plurality of nodes linking to a first content of a first content repository of said plurality of disparate content repositories, a sixth node of the plurality of nodes linking to a second content of a second content repository of said plurality of disparate content repositories, a seventh node of the plurality of nodes linking to a first content organizing structure of the first content repository, and an eighth node of the plurality of nodes linking to a second content organizing structure of the second content repository;

creating, via the module API, a plurality of associations describing relationships between the nodes, each association of said plurality of associations having at least two nodes of the plurality of nodes that are members of said each ~~that~~ association, said each association describing a relationship between the members of that association, said each association also being a node of said plurality of nodes, wherein said first second, third fourth, fifth, sixth, seventh and eighth nodes are members of at least one association of the plurality of associations, wherein said first node linking to said first work item of said first workflow system and said first content of said first content repository are related via at least one particular association of said plurality of associations; and

providing a plurality of locators to reference and de-reference entities external to the module system, said plurality of locators comprising a first locator to a first external entity reference, the first external entity being said first work item of said first workflow system, the first locator leverages workflow integration middleware to reference said first work item of said first workflow system; a second locator to a second external entity reference, the second external entity being said second work item, the second locator leverages said workflow integration middleware to reference said second work item from said second workflow system; a third locator to a third external entity reference, the third external entity being said first work organizing structure of said first workflow system, the third locator leverages said workflow integration middleware to reference said first work organizing structure of said first workflow system, a fourth locator to a fourth external entity reference, the fourth external entity being said second work organizing structure, the fourth locator leverages said workflow integration middleware to reference said second work organizing structure of said second workflow system; a fifth locator to a fifth external entity reference, the fifth external entity being said first content of said first content repository, the fifth locator leverages content integration middleware to reference said first content of said first content repository; a sixth locator to a sixth external entity reference, the sixth external entity being said second content of said second content repository, the sixth locator leverages said content integration middleware to reference said second content of said second content repository; a seventh locator to a seventh external entity reference, the seventh external entity being said first content organizing structure of said first content repository, the seventh locator leverages said content integration middleware to reference said first content organizing structure of said first content repository; an eighth locator to an eighth external entity reference, the eighth external entity being said second content organizing structure, the eighth locator leverages said content integration middleware to reference said second content organizing structure of said second content repository; and an extensible locator interface to provide [[a]] at least one additional locator to another external information source system; and

accessing said entities via said module API, wherein said first work item of said first workflow system is accessed via said first node, said first locator and said workflow integration middleware; said second work item of said second workflow system is accessed via said second node, said second locator and said workflow integration middleware; said first work organizing structure of said first workflow system is accessed via said third node, said third locator and said workflow integration middleware; said second work organizing structure of said second workflow system is accessed via said fourth node, said fourth locator and said workflow integration middleware; said first content of said first content repository is accessed via said fifth node, said fifth locator and said content integration middleware; said second content of said second content repository is accessed via said sixth node, said sixth locator and said content integration middleware; said first content organizing structure of said first content repository is accessed via said seventh node, said seventh locator and said content integration middleware; said second content organizing structure of said second content repository is accessed via said eighth node, said eighth locator and said content integration middleware.

Claim 51 (canceled)

Claim 52 (new): The computer system of Claim 39 wherein each subscription of the subscriptions is stored with at least one of: meta-data describing said each subscription, encrypted user credentials, a representation of a state of a subscribed-to-item of said each subscription, and a membership in a logical subscription group.

Claim 53 (new): The computer system of Claim 39 wherein the API is in a format selected from the group consisting of Java, Component Object Model (COM), Simple Object Protocol (SOAP) Web Services, Representational State Transfer (REST) Web Services, and Web Development Components.

Claim 54 (new): The computer system of Claim 39 further comprising at least one of a graphical user interface and a web-based interface.

Claim 55 (new): The computer system of Claim 39 wherein at least two of the subscriptions with a common polling interval are organized into a logical group.

Claim 56 (new): The computer system of Claim 39 wherein at least two of the subscriptions with a common event path are organized into a logical group.

Claim 57 (new): A computer-implemented method of providing notification of at least one-event handler, comprising:

- providing a module application program interface (API) to interface with a software application;

- creating, via the module API, a plurality of subscriptions to a plurality of subscribed-to-items, respectively, the subscribed-to-items comprising a first content of a first content repository, a first content organizing structure of the first content repository, a first work item of a first workflow system, a first work organizing structure of the first workflow system, a second content of a second content repository, a second content organizing structure of the second content repository, a second work item of a second workflow system, a second work organizing structure of the second workflow system;

- wherein the subscriptions are requests to track when at least one of an addition, change and delete occurs to any of the subscribed-to-items, respectively;

- configuring, via the module API, an event path defined per a logical group comprising a timer, a subscription group processor that creates events based on the subscriptions in response to the timer, a content monitor that detects change based on the events, an event filter that filters uninteresting change and interesting change based on the change detected by the content monitor; and

- receiving, by the event handler, the interesting change.

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Claim 58 (new): The computer system of claim 24 wherein the associations have association types, wherein the association types have logical properties describing the type of the relationship, wherein said logical properties comprise an allowed cardinality of the relationship, allowed members of the relationship, required members of the relationship, a transitivity of the relationship, a delete propagation across the relationship, and a save propagation across the relationship.